

# (12) UK Patent Application (19) GB (11) 2 367 493 (13) A

(43) Date of A Publication 10.04.2002

(21) Application No 0024590.2

(22) Date of Filing 07.10.2000

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(51) INT CL<sup>7</sup>  
**A01N 25/30**

(52) UK CL (Edition T )  
**A5E EF E300 E303 E318**  
**U1S S1097 S1102 S1277 S1279 S1290 S1303**

(56) Documents Cited  
**US 5607715 A**  
**WPI Abstract Accession No 1997-276666/25 &**  
**JP 090100206 A 15.04.1997**

(58) Field of Search  
UK CL (Edition S ) **A5E EF**  
INT CL<sup>7</sup> **A01N 25/30**  
Online: EPODOC, JAPIO, WPI

(54) Abstract Title  
**Composition for deterring rodents comprising a capsicum oleoresin, a polyoxyethylene sorbitan fatty acid ester & a fatty acid triglyceride**

(57) A rodent-deterrent composition comprises:  
(a) a capsicum oleoresin,  
(b) a polyoxyethylene sorbitan fatty acid ester,  
(c) a fatty acid triglyceride, and  
(d) water

and is in the form of an oil-in-water emulsion. It gives good overall coverage of treated areas.

The capsicum oleoresin may be obtained by extraction of the fruits of *Capsicum annum* L. or *Capsicum frutescens* L. The polyoxyethylene sorbitan fatty acid ester is preferably a sorbitan monooleate or trioleate ester or a sorbitan monopalmitate ester, with about 20 units ethylene oxide. The fatty acid triglyceride is preferably a C<sub>8-10</sub> saturated fatty acid triglyceride.

A bird feed (eg one comprising seeds, nuts or a fat ball) may be rendered deterrent to rodents by applying the above composition to the feed.

The two surfactants present in the composition are of food grade and are fully biodegradable.

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## COMPOSITION AND METHOD FOR DETERRING RODENTS

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This invention relates to a method for the deterrence of rodents, to a composition for this purpose, and to an animal food treated with such a composition. More particularly, it relates to a method, a composition, and  
10 animal food intended to repel the grey squirrel (*Sciurus carolinensis*).

Although the grey squirrel was introduced into Britain more than a century ago, it is only in the last two or  
15 three decades that it has become so widespread through large areas of the country as to become a major pest, and almost entirely to replace the native red squirrel (*Sciurus vulgaris*).

20 The problem of this infestation has become more prevalent because of the increasing practice of putting out food, such as nuts and seeds, intended to attract wild birds to gardens. The grey squirrel is a very efficient forager, and has become very efficient at finding out how to take  
25 food from bird feeders. There have even been television programmes displaying their ingenuity and capacity for learning how to circumvent quite complicated barriers.

Although they are not unattractive to the sight, they can  
30 constitute a health and economic hazard. As rodents, they are vehicles for the transmission of a variety of bacterial and viral infections, which may be transmitted to humans or domestic animals which come into contact with their urine or faeces. They may also be hosts to

ticks or fleas which may then be transferred to domestic  
pets. They can, moreover cause severe structural damage  
to buildings if they should gain access to roof spaces.  
In addition, they can very readily multiply domestic  
5 expenditure on bird seed and nuts.

Various methods have been adopted to deter these pests.  
For instance there are various barrier systems and traps,  
but these have been found to be costly and to have only  
10 limited effectiveness. Chemical methods have also been  
proposed, but these also have a number of practical  
disadvantages. For instance, one method that has been  
employed is to sprinkle finely ground black pepper or  
capsicum seed around areas where squirrels enter or  
15 congregate. Although this can be effective, in that  
squirrels are repelled, there is the disadvantage that  
long term deterrence has proved difficult for practical  
reasons. Powders are not easily applied to areas that are  
exposed, not flat, or inaccessible. For instance, powders  
20 cannot be applied to vertical or steeply-sloping areas,  
such as walls or roofs, or to bird food hanging in  
vertical nets or cages. Even when applied to horizontal  
surfaces, such as bird tables, the tops of walls or  
fences, the roofs of sheds etc., long term protection is  
25 difficult or impossible, because even slight breezes will  
disperse the powder, and render it ineffective. There is  
therefore a need for a simple means of deterring  
squirrels or other rodents which is effective and long  
lasting, and which imposes no health hazards to humans,  
30 domestic pets or to bird life. The present invention  
provides a simple means of meeting these requirements.

In one embodiment the present invention provides a  
rodent-deterrent composition which comprises:

- (a) a capsicum oleoresin,
- (b) a polyoxyethylene sorbitan fatty acid ester,
- (c) a fatty acid triglyceride, and
- (d) water.

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Preferably the composition according to the invention comprises:

- (a) from 0.10 to 10.00 %w/w of the capsicum oleoresin,
- 10 (b) from 0.15 to 15.00 %w/w of the polyoxyethylene sorbitan fatty acid ester,
- (c) from 0.15 to 15.00 %w/w of the fatty acid triglyceride, and
- (d) from 60.00 to 99.60 %w/w of water.

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More preferably, the composition comprises:

- (a) from 0.10 to 0.50 %w/w of the capsicum oleoresin,
- (b) from 0.15 to 0.75 %w/w of the polyoxyethylene
- 20 sorbitan fatty acid ester,
- (c) from 0.15 to 0.75 %w/w of the fatty acid triglyceride, and
- (d) from 98.00 to 99.60 %w/w of water.

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The capsicum oleoresin is obtained by extraction in known manner of the fruits of *Capsicum annum* L. or *Capsicum frutescens* L. or other *Capsicum* species.

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Suitable polyoxyethylene sorbitan fatty acid esters include oleic acid esters and palmitic acid esters. Examples of suitable commercially available esters include:

- Surfacare T20: Sorbitan trioleate ester with 20 units  
                  (moles) ethylene oxide, (EO)
- Crillet 4: Sorbitan monooleate ester with 20 units  
                  EO
- 5 Tween 4: Sorbitan monopalmitate ester with 20 units  
                  EO
- Tween 85: Sorbitan trioleate ester with 20 units EO

10 According to another embodiment, the invention provides a  
method of rendering a bird feed, such as seeds, nuts or a  
fat ball, deterrent to rodents which comprises applying a  
composition as described above.

15 A suitable commercially available saturated fatty acid  
triglyceride is Surfac MCTG, a C<sub>8</sub> - C<sub>10</sub> saturated fatty  
acid triglyceride.

20 The compositions according to the invention are oil-in-  
water emulsions which have moderate phase stability and a  
large droplet size, giving good overall coverage of  
treated areas. They combine non-toxicity, due to the use  
of low levels of the capsicum oil and of two surfactants,  
which are of food grade and are fully biodegradable. They  
are thus able to combine convenience and effectiveness in  
25 use with a high initial activity and low environmental  
impact.

30 In the formation of the emulsions, use is made of two  
surfactants, component (b) acting as the primary  
emulsifier, while component (c) acts as secondary  
emulsifier. It is found that the combination of the two  
surfactants provides the most acceptable emulsion  
characteristics.

It is found that the compositions according to the invention are effective in deterring rodents, such as grey squirrels, while being palatable to garden birds.

- 5 If desired, other ingredients, such as food grade dyes, may be incorporated into the compositions for special purposes.

## CLAIMS

- 1 A rodent-deterrent composition which comprises:
  - (a) a capsicum oleoresin,
  - (b) a polyoxyethylene sorbitan fatty acid ester,
  - (c) a fatty acid triglyceride, and
  - (d) water.
  
- 2 A composition according to claim 1 which comprises:
  - (a) from 0.10 to 10.00 %w/w of the capsicum oleoresin,
  - (b) from 0.15 to 15.00 %w/w of the polyoxyethylene sorbitan fatty acid ester,
  - (c) from 0.15 to 15.00 %w/w of the fatty acid triglyceride, and
  - (d) from 60.00 to 99.60 %w/w of water.
  
- 3 A composition according to claim 1 or 2 which comprises:
  - (a) from 0.10 to 0.50 %w/w of the capsicum oleoresin,
  - (b) from 0.15 to 0.75 %w/w of the polyoxyethylene sorbitan fatty acid ester,
  - (c) from 0.15 to 0.75 %w/w of the fatty acid triglyceride, and
  - (d) from 98.00 to 99.60 %w/w of water.
  
- 4 A composition according to any of claims 1 to 3 wherein the capsicum oleoresin is obtained by extraction of the fruits of *Capsicum annum* L. or *Capsicum frutescens* L.
  
- 5 A composition according to any one of the preceding

claims wherein the polyoxyethylene sorbitan fatty acid ester is an oleic acid ester or a palmitic acid ester.

6 A composition according to claim 5 wherein the polyoxyethylene sorbitan fatty acid ester is a sorbitan monooleate or trioleate ester or a sorbitan monopalmitate ester, with about 20 units ethylene oxide.

7 A composition according to any one of the preceding claims wherein the fatty acid triglyceride is a  $C_8 - C_{10}$  saturated fatty acid triglyceride.

8 A method of rendering a bird feed deterrent to rodents which comprises applying a composition according to any of claims 1 to 7 to the feed.

9 A method according to claim 8 wherein the bird feed comprises seeds, nuts or a fat ball.





INVESTOR IN PEOPLE

**Application No:** GB 0024590.2  
**Claims searched:** 1-9

**Examiner:** Stephen Quick  
**Date of search:** 4 April 2001

## Patents Act 1977 Search Report under Section 17

### Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:  
UK Cl (Ed.S): A5E (EF)  
Int Cl (Ed.7): A01N 25/30  
Other: Online: EPODOC, JAPIO, WPI

### Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
A	US 5607715 A (PROCTER & GAMBLE), see columns 2 (lines 14-22 & 28-31) & 4 (lines 54-57)	-
A	WPI Abstract Accession No 1997-276666/25 & JP 090100206 A 15.04.1997, see abstract (rat repellent comprising capsicum oil)	-

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.